

## Cromemco Software Update Service Note Z80 Cromix-7

Date: December 21, 1983

Product: CROMIX-L and CROMIX-S

Release: 8

Date production of this version began: Dec. 22, 1983 on 8"  
Dec. 22 1983 on 5"

First serial number with this version: 8-10000 on 8"  
8-10000 on 5"

### SUMMARY

Version 11.22 of the Z80 Cromix Operating System is now available. This version corrects problems arising from incorrect handling of the user signal by the Screen editor program and the Shell. This version also contains enhanced versions of several utility programs and new hard-disk drivers to correct problems arising from timing variations encountered with the Model 5007 hard disk.

### CORRECTIONS

#### User Signal

Previous versions of the Screen editor and the Shell handled the user signal incorrectly. Specifically, if the user called a shell from Screen (%) and set SIGenable, it was then possible to kill Screen by sending it the user signal. Aside from potentially destroying the data being edited, this also made the shell a parentless process. The new versions of these programs correct this problem.

#### Blink Utility

Versions of Blink on previous releases would not allow the specification of a program address less than 100h. The current version of Blink no longer imposes this restriction.

Cromemco Software Update Service Note  
Cromix Release 8

### **Makfs Utility**

In the previous version of Makfs, problems would arise if the **-i** option was used to create a non-default number of inodes and the number of inodes specified was not a multiple of 4 (4 inodes are contained in a block). Makfs now rounds the number of inodes specified by the user down to the nearest multiple of 4.

### **Tee Program**

In the previous release, the Tee program did not erase old files. This problem has been corrected.

## **ENHANCEMENTS**

### **Cptree Utility**

The Cptree utility now preserves not only the user and access mode of copied files, but also all the dates (creation, modify, access, and dumped). Copies of files made with the Cptree utility are identical to the original in every respect. Because the new copy of the file keeps the original modify date, copy operations with the **-t** (time) option will behave more naturally.

### **Copy Utility**

The Copy utility behaves the same way as Cptree. The copied file has the same user, access mode, and dates as the original.

### **Move Utility**

The Move utility (when copying from a source file to a destination file) behaves the same way as Cptree. The destination file has the same user, access mode, and dates as the source file.

### **Sim Utility**

System call 28h is now implemented in Sim.

## Ccall Utility

utility: CCALL

purpose: This program allows users to call up another Cromix system (or possibly a non-Cromix system) using the Cromemco MDM-1200 (or possibly another modem).

user access: all users

summary: ccall [-q] [-d devname] [-b baud]  
[-n phonenumber] [-w]

arguments: none

options: -q quiet (default is verbose)  
-d tty device name (default is /dev/modem)  
-b baud rate (default is 1200 baud)  
-n phone number (dashes may be used in number)  
-w wait for manual dial and connection

## Description

Ccall may operate at either 300 or 1200 baud. It must use an asynchronous modem such as the Cromemco MDM-1200, a Bell 212A, or a Bell 103 type. The modem used must be compatible with the modem on the remote system. The modem can be connected to any serial port on the Quadart using a 12-wire cable constructed for this purpose.

The tty driver is used to connect Ccall with the IOP/Quadart and modem. The Cromix system being used must include the IOP/Quadart drivers (see Crogen) and a device file for the tty should be set up in the /dev directory using Makdev. The corresponding entry in the /etc/ttys file should have a 0 in the first column.

If a Cromemco MDM-1200 modem is being used, a telephone number can be added to the command line to perform automatic dialing. Otherwise, the call must be manually originated using standard modem procedures.

## Example

```
% ccall -b 300 -n 555-1212
```

This command line sets the transmission rate at 300 baud and uses device tty1 with a connected MDM-1200 that auto-dials the number 555-1212.

Cromemco Software Update Service Note  
Cromix Release 8

Ccall interprets lines beginning with '~' as special escape sequences:

- ~: Terminate Ccall.  
Send the line '~...'. To type a line beginning with '~' to the remote computer, you must first type '~' twice followed by a RETURN; then you can type the rest of the line.
- ~< filename Send the contents of a file to the remote system, as though typed at the terminal.
- ~> filename Divert all characters received from the remote system into the specified file. '>' may be followed by '>' to append the output to the file. Either '>' may be followed by ':' to specify that the output be sent only to the file. If ':' is omitted, output is written both to the file and to the standard output. If '>>' is not used, then the file must not exist prior to issuing this command. Typing '~>' will terminate the diversion. (Full syntax: ~>[>][:] filename)
- ~sh Invoke an interactive shell on the local system.
- ~sh cmd Run the command on the local system (via shell -c).
- ~put [-f] file-list Copy the specified files from the local system to the current directory on the remote system. If a filename already exists at the destination, the force option (-f) must be used if you want the existing file to be overwritten; otherwise, an error will be reported and the file will not be copied. **put** uses the Sfile and Rfile utilities to perform error-free block transfers. Rfile must exist on the remote system.
- ~take [-f] file-list Copy the specified files from the remote system to the current directory on the local system. If a filename already exists at the destination, the force option (-f) must be used if you want the existing file to be overwritten; otherwise, an error will be reported and the file will not be copied. **take** uses the Sfile and Rfile utilities to perform error-free block transfers. Sfile must exist on the remote system.

- ~#                Send a one-second break signal to the remote system.
- ~h                Print a summary of these commands.

### Messages Returned by Ccall

Now waiting for call to complete ...

Ccall is waiting for a connection to be made with another modem over the phone lines. This call can either be dialed manually using Bell equipment or the MDM-1200 can dial the number and establish the connection automatically.

No answer -- Call aborted

If a connection is not established within 120 seconds, Ccall exits back to the Cromix shell.

### Options

The -q option keeps Ccall from being too verbose.

The -d option specifies which tty device is to be the transmitter.

The -b option sets the baud rate of the transmitting device.

The -n option specifies a phone number to be used by the MDM-1200 modem.

The -w option specifies that Ccall is to wait for the connection to be manually originated.

### Notes

If the -w option is used without a phone number, Ccall waits for the user to establish a connection manually using standard modem procedures. If the -n option and the -w option are not used, Ccall attempts to establish an interactive dialog with the MDM-1200. The user can then use all of the features of the MDM-1200 to establish a connection with a remote system (see MDM-1200 manual).

### Rfile utility

utility: RFILE  
purpose: This program allows binary files to be received from users over the phone lines with error-free results.  
user access: all users  
summary: rfile [-q] [-f] [-d device-name] [-b baud] dst-directory  
arguments: destination directory pathname (must already exist)  
options: -q quiet (default is verbose)  
          -f force  
          -d tty device name (default is stdin/stdout)  
          -b baud rate (default is current baud rate)

### Description

The Rfile utility allows binary disk files to be received by a user on one Cromix system from a user on another Cromix system that is using the Sfile utility to transmit files.

Rfile may operate at either 300 or 1200 baud. It must use an asynchronous modem such as the Cromemco MDM-1200, a Bell 212A, or a Bell 103 type. The modem used must be compatible with the modem the Sfile utility is using to transmit the data. The modem can be connected to any serial port on the Quadart using a 12-wire cable constructed for this purpose.

The tty driver is used to connect Rfile with the IOP/Quadart and modem. The Cromix system being used must include the IOP/Quadart drivers (see Crogen) and a device file for the tty should be set up in the /dev directory using Makdev. The corresponding entry in the /etc/ttys file should have a 0 in the first column.

### Example

```
% rfile -d tty2 -b 300 rcvtemp
```

This command line sets the reception rate at 300 baud and stores all of the data received from tty2 into the existing directory named rcvtemp.

### Messages Returned by Rfile

Waiting for phone call --

Rfile is in an idle state waiting for a connection from the Sfile utility. Rfile will remain in this mode indefinitely if Sfile fails to make a valid connection.

Receiving [filename] from [devname] into [directory-name]

A valid connection to the Sfile utility has been established and data is being transferred from the tty device to the specified diskfile in the specified directory.

Connection lost -- ABORT RFILE

The line to Sfile was disconnected prematurely.

ABORT RFILE

A CONTROL-C character was received from the user at the keyboard; Rfile does an orderly exit back to the Cromix shell.

### Options

The -q option specifies a different set of Rfile console messages. (Used by Ccall and when Rfile is running on a remote machine.)

The -f option causes Rfile to overwrite any existing file with the same pathname as the file sent by Sfile. If this option is not specified and another file exists with the destination pathname, an error is reported.

The -d option specifies which tty device is to be the receiver.

The -b option sets the baud rate of the receiving device.

### Notes

Rfile is used in conjunction with Sfile. Refer to the Sfile utility for additional information.

When used without an argument, Rfile displays a summary of the command line syntax.

## Sfile Utility

utility: SFILE

purpose: This program allows binary files to be sent between users over the phone lines with error-free results.

user access: all users

summary: sfile [-q] [-d devname] [-b baud]  
          [-n phonenumber] [-l login-name]  
          [-p password] file-list

arguments: one or more filenames

options: -q quiet (default is verbose)  
          -d tty device name (default is stdout)  
          -b baud rate (default is current baud rate)  
          -n phone number (dashes may be used)  
          -l login name  
          -p password

## Description

The Sfile utility allows binary disk files to be transmitted from a user on one Cromix system to a user on another Cromix system using the Rfile utility to receive files.

Sfile may operate at either 300 or 1200 baud. It must use an asynchronous modem such as the Cromemco MDM-1200, a Bell 212A, or a Bell 103 type. The modem used must be compatible with the modem the Rfile utility is using to receive the data. The modem can be connected to any serial port on the Quadart using a 12-wire cable constructed for this purpose.

The tty driver is used to connect Sfile with the IOP/Quadart and modem. The Cromix system being used must include the IOP/Quadart drivers (see Crogen), and a device file for the tty should be set up in the /dev directory using Makdev. The corresponding entry in the /etc/ttys file should have a 0 in the first column.

If a Cromemco MDM-1200 modem is being used, a telephone number can be added to the command line to perform automatic dialing. Otherwise, the call must be manually originated using standard modem procedures.

## Example

```
% sfile -d tty1 -b 300 -n 555-1212 letter.txt
```



This command line sets the transmission rate at 300 baud and transmits the file `letter.txt` using device `qtty1` with a connected MDM-1200 that auto-dials the number 555-1212.

### Messages Returned by Sfile

Now waiting for call to complete ...

Sfile is waiting for a connection to be made with another modem over the phone lines. This call can either be dialed manually using Bell equipment or the MDM-1200 can dial the number and establish the connection automatically.

No answer -- Call aborted

If a connection is not established within 60 seconds, Sfile exits back to the Cromix shell.

Transmitting [filename] to [devname]

When a valid connection is established with the Rfile utility at the other end, the specified file is then transmitted through the specified qtty device.

Rfile not responding -- Sfile aborted

If a connection is established with another modem, Sfile determines if the Rfile utility is ready at that end. If Rfile is not running at the other end, or if Rfile is running at an incompatible baud rate, Sfile disconnects the line and exits back to the Cromix shell.

Connection lost -- ABORT SFILE

The line was disconnected in the middle of a transmission; Sfile then exits to the Cromix shell.

ABORT SFILE

A CONTROL-C character was received from the user at the keyboard; Sfile does an orderly exit back to the Cromix shell.

### Options

The `-q` option specifies a different set of Sfile console messages (used by CCall and when Sfile is running on a remote system).

The `-d` option specifies which qtty device is to be the transmitter.

The **-b** option sets the baud rate of the transmitting device.

The **-n** option specifies a phone number to be used by the MDM-1200 modem.

The **-l** option specifies a login name to be used on the remote Cromix system.

The **-p** option specifies a password to be used on the remote Cromix system.

### Notes

Sfile is used in conjunction with Rfile. Refer to the Rfile utility for additional information.

When used without an argument, Sfile displays a summary of the command line syntax.

### Flush Utility

Flush is a new system-maintenance program that flushes (i.e., writes to disk) system I/O buffers every specified number of seconds. Normally, for efficiency, the Cromix Operating System will not write the contents of a buffer to disk until it has been completely filled. If you conclude an edit session and leave your system running overnight, portions of your file may reside in system buffers overnight (not written to disk). If the system is later abruptly powered down without running shutdown, or if there is a power failure, this information will be lost. As a safeguard, it is desirable to periodically flush the I/O buffers using the Flush utility.

The Flush program resides in the /bin directory. It is called by typing:

flush number &

where **number** is the number of seconds between two consecutive flushes. Currently the **startup.cmd** file is configured to invoke Flush, as a background process with an interval of 30 seconds, every time the system is booted.

### Hard Disk Drivers

The hard disk drivers have been improved to compensate for timing variations in the Model 5007 five-inch hard disk. In the past, timing differences between the writing and reading

of data could result in CRC errors. The new drivers greatly reduce the probability of data loss due to timing differences.

### Hdboot

With the impending release of RDOS 3.08, Cromix systems will be able to boot directly from their hard disk. The file **hdboot**, contained in the **/etc** directory, is included in this release to provide users who upgrade to RDOS 3.08 with this capability. As with **fdboot** and **sfdboot**, the information contained in **hdboot** can be written to the system tracks using **wboot**. For example, the command "**wboot hd0**" will write the boot information onto hard disk unit 0.

### List Utility

The List utility has been added to the **/bin** directory. This is an enhanced version of the standard List utility. When called without options, List displays filenames only, arranged in a multi-column format. Since file length and link count information is not displayed, the display is produced much faster than that of the standard List utility. The options to List are unchanged. Specifying any option (or just typing **ls -**) causes the program to act in the same manner as the standard List utility.

### Sim Utility

The CDOS simulator, Sim, has been upgraded. It not only executes faster, but is also more flexible than the previous version. As in previous versions, Sim will, by default, map the CDOS directories B-H to the Cromix directories **/b-/h**. With this version, however, the user can permanently redefine the default mapping or, when calling Sim explicitly, specify an alternate mapping. The use of Sim is as described in the Cromix Instruction Manual, except for the added capability to specify different mappings when calling Sim explicitly.

The permanent mapping of CDOS directories to Cromix directories is defined by the contents of a table contained in Sim, starting at byte location 509h. This table contains a 16-byte entry for each CDOS directory. This entry is the pathname of the Cromix directory that the particular CDOS directory maps to. The Dump utility may be used to display the contents of this table. The entry for CDOS directory A starts at location 509h, the entry for CDOS directory B starts at location 519h, and so on.

Cromemco Software Update Service Note  
Cromix Release 8

If you want to permanently change the mapping of one or more CDOS directories, you can use the Patch utility to change the contents of this table. The entry for drive A refers to the current directory and should not be changed. When changing an entry:

1. Each pathname must have a '/' at the end.
2. Each string must be terminated with a null.
3. The pathname, including '/', cannot exceed 15 characters in length.

The mapping of CDOS directories to Cromix directories may more conveniently be defined when calling Sim explicitly. For instance:

```
sim -c /usr/lib pathname arguments
```

will refer all references to the CDOS C directory to the Cromix /usr/lib directory. Thus, one or more CDOS directories may be remapped to specific Cromix directories by typing the letter of the CDOS directory as a flag and then typing the Cromix directory as the next argument. Note that the pathname of the executable program above must be a complete pathname (including extension). The shell's search mechanism will apply only to the name Sim.

### Version Utility

The Version program has been extended to check the consistency of a file. In general, if the following string of bytes is found anywhere within a file:

OFDH OEDH OFDH OEDH

the bytes immediately following are assumed to contain CRC information, version number, release number, and program name. When called with the -c option, Version will compute a CRC value for that file. The version of the program actually writing the CRC will be written, in the two bytes immediately following the FDEDFDED pattern, followed in the next two bytes by the CRC value itself. When called without -c, Version reports good or bad file consistency by comparing a newly calculated CRC with the recorded CRC. As before, version information about the file is also displayed. Thus, Version can be run on the /bin directory, for example, to check the correctness and completeness of all executable programs.

To be more specific, consider the following portion of a file:

```
db      OFDH,OEDH,OFDH,OEDH
db      0,0,0,0
db      version, revision
db      'program name\n'
```

When called with the `-c` option, the version/revision number of the Version program itself will be written to the first two bytes following the `FD E D F D E D` pattern. The CRC will then be written to the following two bytes.

#### **/gen/iolib.rel**

Changes to `iolib.rel` include corrections to the `qTTY` driver and a rewritten `typ` printer driver, described elsewhere.

#### **Crogen Program**

This is a new version of Crogen. It differs from the previous version in a few ways. Crogen no longer prompts for a simple YES/NO response regarding the inclusion of hard disk and typewriter printer drivers. Crogen now expects a response indicating the number of these devices in the range: 0-2 for the typewriter printer and 0-3 for hard disks. The size of `cromix.sys` can be reduced slightly by including fewer of these devices. Crogen also prompts for inclusion of the SMD driver (4,0). This is to anticipate the future release of the SMD hardware and driver.

#### **TYP - Cromix Typewriter Printer Driver**

The Cromix Typewriter Printer Driver has been enhanced. The following is a list of new modes, status conditions and special character sequences.

#### **Additional Modes:**

**LMargin** Left printing margin in 0.1 inch steps from print position 1. Defines where printing will begin after a RETURN. The printer may be backspaced to the left of the left margin setting. The printer will clip at print position 1.

Cromemco Software Update Service Note  
Cromix Release 8

|         |   |
|---------|---|
| Width   | Right printing margin in 0.1 inch steps from print position 1. Printer will clip at right margin if -WRAParound mode is set or wrap at right margin if WRAParound is set. |
| CWidth  | Character width. Default spacing between characters in 1/120 of an inch.  |
| LHeight | Line height. Default spacing between lines in 1/48 of an inch.  |

**Printer Status Conditions Returned By Mode:**

|              |   |
|--------------|---|
| (-)CHECK     | Printer is (not) in a check condition. A check condition requires the printer to be reset before use. |
| (-)PAPER IN  | Paper is (not) loaded into the printer.   |
| (-)RIBBON IN | Ribbon is (not) loaded into the printer.  |
| (-)ON LINE   | Printer is (not) on-line and selected.  |

**Single Special Characters Recognized By the Driver:**

|                 |   |
|-----------------|---|
| (CONTROL-A) 01h | Toggle Underline  |
| (CONTROL-B) 02h | Line space back 1/2 current line setting (begin superscript)                      |
| (CONTROL-C) 03h | Line space forward 1/2 current line setting (begin subscript)                     |
| (CONTROL-D) 04h | Force immediate printing of any characters and spacing commands in printer buffer |
| (CONTROL-E) 05h | Enter dot plot mode   |
| (CONTROL-F) 06h | Toggle boldface   |
| (CONTROL-Y) 19h | Special mode prefix character (see below)   |
| (Delete) 7Fh    | Reset printer   |
| 80h-BFh         | Set temporary CWidth = char-80h in 1/120 of an inch increments                    |
| C0h-FFh         | Variable Width Space = char-C0h in 1/120 of an inch increments                    |

### Two Character Special Sequences Recognized by the Driver:

|              |   |
|--------------|---|
| 19h, 80h-BFh | Set temporary LHeight = char2-80h in 1/48 of an inch increments |
| 19h, 20h     | 32 spaces   |
| 19h, 08h     | 32 backspaces   |
| 19h, 02h     | Line space back 16 times current line setting                   |
| 19h, 03h     | Line space forward 16 times current line setting                |

### Three Character Special Sequences Recognized by the Driver:

19h, C0h-FFh, C0h-FFh Reserved

For further information about single character commands refer to:

Cromemco 3355A Printer Driver Instruction Manual, part number 023-4005.

### CHANGES

#### Modeequ.z80

The section at the end of this file, which equated the old names for mode functions to the new names, has been removed. Be sure to refer to all mode functions by their new names.

#### Mode Utility

Mode has been modified to reflect the changes in the new Typ driver.

#### Added Files

The following file has been added to the CRO-DL (8-inch) and CRO-DS (5.25-inch) diskettes:

1. The Cdosfix utility has been added to the /bin directory. The Cdosfix program can be used on a Cromix system to remove the padding characters (CONTROL-Z) from the ends of CDOS files after they are transferred from CDOS to Cromix diskettes. See the file /help/cdosfix.hlp for documentation.

Cromemco Software Update Service Note  
Cromix Release 8

VERSION NUMBER SUMMARY

|                |       |       |
|----------------|-------|-------|
| Files in /     |       |       |
| cromix.iop.sys | 11.22 | -new- |
| cromix.sys     | 11.22 | -new- |
| Files in /bin  |       |       |
| access.bin     | 00.06 |       |
| backup.bin     | 00.08 |       |
| blink.bin      | 00.14 | -new- |
| boot.bin       | 00.02 |       |
| ccall.bin      | 00.07 | -new- |
| cdoscopy.bin   | 00.15 |       |
| cdosfix.bin    | 00.01 | -new- |
| chowner.bin    | 00.06 |       |
| cmpasc.bin     | 00.05 |       |
| compare.bin    | 00.07 |       |
| copy.bin       | 00.11 | -new- |
| cptree.bin     | 00.07 | -new- |
| day.bin        | 01.02 |       |
| dcheck.bin     | 00.12 |       |
| ddump.bin      | 02.02 | -new- |
| deltree.bin    | 00.03 |       |
| dump.bin       | 00.10 |       |
| echo.bin       | 00.05 |       |
| ed.bin         | 01.45 | -new- |
| find.bin       | 00.07 |       |
| flush.bin      | 00.01 | -new- |
| free.bin       | 00.09 |       |
| group.bin      | 00.01 |       |
| h.bin          | 00.04 |       |
| help.bin       | 00.04 |       |
| icheck.bin     | 00.15 |       |
| idump.bin      | 00.06 |       |
| init.com       | 02.82 |       |
| input.bin      | 01.00 |       |
| l.bin          | 00.11 |       |
| ls.bin         | 00.01 | -new- |
| mail.bin       | 02.02 | -new- |
| makdev.bin     | 00.07 |       |
| makfs.bin      | 00.13 |       |
| maklink.bin    | 00.04 |       |
| match.bin      | 00.03 |       |
| mode.bin       | 01.15 | -new- |
| mount.bin      | 00.14 | -new- |
| move.bin       | 00.10 | -new- |
| msg.bin        | 00.08 |       |
| ncheck.bin     | 00.09 |       |
| passwd.bin     | 00.09 |       |
| patch.bin      | 00.03 |       |
| priv.bin       | 00.07 |       |
| restore.bin    | 00.05 |       |
| rfile.bin      | 00.07 | -new- |
| root.bin       | 00.02 |       |



emco Software Update Service Note  
 nix Release 8

|                   |       |       |
|-------------------|-------|-------|
| screen.bin        | 01.45 | -new- |
| sfile.bin         | 00.07 | -new- |
| sim.bin           | 02.65 | -new- |
| sort.bin          | 00.06 |       |
| spool.bin         | 00.12 |       |
| tee.bin           | 01.03 | -new- |
| testinp.bin       | 01.01 |       |
| time.bin          | 00.07 |       |
| unmount.bin       | 00.11 |       |
| usage.bin         | 00.06 |       |
| version.bin       | 00.10 | -new- |
| wboot.bin         | 00.09 |       |
| who.bin           | 00.06 |       |
| Files in /dev/iop |       |       |
| cromix.iop        | 11.21 | -new- |
| ioprun.bin        | 03.00 |       |
| Files in /etc     |       |       |
| fdboot            | 00.11 | -new- |
| hdboot            | 00.05 | -new- |
| login.bin         | 00.02 |       |
| sfdboot           | 00.11 | -new- |
| Files in /gen     |       |       |
| crogen.bin        | 00.22 | -new- |
| crolib.rel        |       |       |
| default.bin       | 00.02 | -new- |
| iolib.rel         |       | -new- |